

REMARKS

Claims 1-31 are pending in this application. Claims 18-20 and 25-31 have been subjected to a restriction requirement and have been withdrawn from consideration.

Withdrawal of Finality

Applicant previously noted that Office Action of January 29, 2004 was improperly made a final Office Action. Applicant reiterates that the Office made a new ground of rejection (of claim 14) that was neither necessitated by amendment nor based on information submitted in an information disclosure statement. But making a second or any subsequent action on the merits final is not permitted where the “examiner introduces a new ground of rejection that is neither necessitated by applicant's amendment of the claims nor based on information submitted in an information disclosure statement” filed after the first Office Action on the merits. *See M.P.E.P. §706.07(a)*.

Applicant has filed the Request for Continued Examination merely to maintain pendency of the present application. Applicant again requests the Office to withdraw the finality of the Office Action of January 29, 2004 and refund the fees for the Request for Continued Examination.

Rejection – 35 U.S.C. § 112

The Office has rejected claims 12-17 and 24 under 35 U.S.C. § 112 ¶2 for the reasons on page 2. Applicant disagrees with the Office for the following reasons.

The Office argues that claims 12 and 24 contain a limitation (portion of the substrate not containing the nitride-containing layer) that lacks sufficient antecedent basis. The Office notes that the claims must require the step of providing a nitride containing layer on only a portion of the substrate upper surface and that the trench is not formed in any particular remaining portion of the substrate.

It appears from this statement that the Office has misinterpreted the present claims. It appears that the Office considers that the trench is to be formed in the portion of the substrate containing the nitride layer. Such is not the case. These claims require that a portion of the substrate is provided with a nitride containing layer, i.e., a first portion. The claims then require that the trench is formed in a portion of the substrate “not” containing the nitride containing layer, i.e., a second portion. The manner in which the claims are presently written are consistent with the invention as described in the specification, i.e., Figure 17 and the accompanying description in the specification.

Thus, there is proper antecedent basis for the claim limitation at issue. Accordingly, the skilled artisan would have considered this limitation in claims 12 and 24 as being definite in light of the specification.

Rejection – 35 U.S.C. § 102(e) over Divakaruni et al.

The Office has rejected claims 6, 12, and 16 under 35 U.S.C. § 102 (e) as being anticipated by Divakaruni et al. (U.S. Published Patent Application No. 2002/014907 A1) for the reasons listed on pages 3-4 of the Office Action. Applicant respectfully traverses this rejection.

The claims recite that a gate oxide layer is provided on the bottom and sidewalls of the trench. The Office, however, has failed to substantiate that Divakaruni et al. teach such a

limitation. Citing paragraphs 0007 & 0008 and Figure 1C, the Office argues that Divakaruni et al. teach such a limitation by providing a stacked silicon nitride/silicon oxide layer 20 on the bottom and sidewall of the trench 16, thereby achieving formation of an oxide on a bottom of a trench. Layer 20 of Divakaruni et al., however, is a node dielectric layer that is part of a capacitor that is formed in the bottom of the trench 16. *See Paragraph [0007]*. As such, it is unlikely that the Office can show that the node dielectric layer of Divakaruni et al. anticipates the gate oxide layer that is recited in the present claims.

For the above reasons, the Office has not substantiated that Divakaruni et al. anticipate each and every limitation in the rejected claims. Accordingly, Applicant respectfully requests withdrawal of this ground of rejection.

Rejection – 35 U.S.C. § 102(b) over Baliga

The Office has rejected claims 1, 2, 5, 12, 14, 15, 17, 21, and 24 under 35 U.S.C. § 102 (b) as being anticipated by Baliga (U.S. Patent No. 5,998,833) for the reasons listed on pages 4-5 of the Office Action. Applicant respectfully traverses this rejection.

The rejected claims are directed to methods for making semiconductor devices by making a trench in a semiconductor substrate and then providing an oxide (or gate oxide) layer on the bottom and sidewall of the trench. Citing Figure 4G, the Office argues that Baliga teaches such a limitation by providing a gate oxide layer 28 on a bottom and sidewall of the trench 20. Applicant respectfully disagrees.

Figure 4G depicts an oxide layer 28 that has been formed in an upper portion of trench 20. *See also Figures 4C and 4D*. Applicant reiterates the previous position that the Office has

not substantiated that the skilled artisan would have considered upper portion of trench 20 as a separate trench.

Further, the oxide layer 28, however, is formed on the sidewalls of trench 20, on the polysilicon layer 26, and oxide layer 24. *See Figure 4G*. Unlike the claimed invention, however, the oxide layer 28 is not adjacent the semiconductor substrate at the bottom of the trench. Thus, the Office has not shown where Baliga teaches that oxide layer 28 is formed on the bottom of a trench formed in a semiconductor substrate.

For the above reasons, the Office has not substantiated that Baliga anticipates each and every limitation in the rejected claims. Accordingly, Applicant respectfully requests withdrawal of this ground of rejection.

Rejection – 35 U.S.C. § 103 over Baliga

The Office has rejected claim 13 under 35 U.S.C. § 103(a) as being unpatentable over Baliga for the reasons listed on page 5 of the Office Action. Applicant respectfully traverses this rejection.

As detailed above, the Office has not shown where Baliga teaches that oxide layer 28 is formed on the bottom of a trench formed in a semiconductor substrate. Nor has the Office argued—much less alleged—that the skilled artisan would have been motivated to modify Baliga to form the oxide layer 28 on the bottom of such a trench.

Thus, the Office has not substantiated that Baliga teaches or suggests each and every limitation in the rejected claims. Accordingly, Applicant respectfully requests withdrawal of this ground of rejection.

Rejection – 35 U.S.C. § 103 over Divakaruni et al. and Baliga

The Office has rejected claim 22 under 35 U.S.C. § 103(a) as being unpatentable over Baliga in combination with Divakaruni et al., for the reasons listed on page 5 of the Office Action. Applicant respectfully traverses this rejection.

As detailed above, the Office has not shown where Baliga teaches that oxide layer 28 is formed on the bottom of a trench formed in a semiconductor substrate. Nor has the Office argued—much less alleged—that the skilled artisan would have been motivated to modify Baliga to form the oxide layer 28 on the bottom of such a trench.

As well, the Office has not shown where Divakaruni et al. teach that the oxide portion of the node dielectric 20 discloses a gate oxide layer. Nor has the Office argued—much less alleged—that the skilled artisan would have been motivated to modify Divakaruni et al. to form the oxide portion of the node dielectric 20 as a gate oxide layer.

Thus, the Office has not shown that either cited reference teaches or suggests this claim limitation. Accordingly, the Office cannot show that the combination of references suggests this limitation.

For the above reasons, the Office has not substantiated that the skilled artisan would have considered claim 22 obvious over the combined teachings of Baliga and Divakaruni et al. Accordingly, Applicant respectfully requests withdrawal of this rejection.

Allowable Subject Matter

Applicant appreciates the indication that claims 3, 4, 7-11, and 23 are allowed.


CONCLUSION

For the above reasons, as well as those of record, Applicant respectfully requests the Office to withdraw the pending grounds of rejection and allow the pending claims.

If there is any fee due in connection with the filing of this Amendment, including a fee for any extension of time not accounted for above, please charge the fee to our Deposit Account No. 50-0843.

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Respectfully Submitted,

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